

ABSTRACT

Background: Periodontal diseases are complex, multifactorial, polymicrobial infections characterized by the destruction of tooth-supporting tissues. Gold standard for the management of periodontitis is scaling, root planning and supportive periodontal maintenance. But these conventional treatments can become less effective, either because of difficulties in the treatment procedures like inaccessible deep pockets, furcation, and concavities or due to systemic conditions. In these conditions various adjunctive treatments like systemic antibiotics, local delivery of antimicrobial agents and lasers are used along with scaling and root planning.

Laser with its bactericidal and detoxification effects can achieve excellent tissue ablation. Laser can achieve excellent healing of periodontal tissues by ablating the inflamed lesions and epithelial lining of the periodontal pockets. Combination of laser and photosensitizer can result in significant reduction of sub gingival microorganisms like *P. gingivalis* and *A. actinomycetemcomitans*.

Aim: Aim of this study is to compare the photodynamic therapy and diode laser as an adjunct to scaling and root planing in the treatment of chronic periodontitis

Objectives: Objective of this study is to evaluate the effectiveness of diode laser and photodynamic therapy using clinical parameters and microbiological evaluation

Materials and methods: A total of 20 patients suffering from chronic periodontitis. A total of 20 patients with clinical diagnosis of chronic periodontitis with a probing depth of 4-6mm were selected for this study. Each patient received scaling and root planing (SRP) for periodontal treatment. In this split-mouth design study, the teeth of one side of the arch were selected as group 1 and other side as group 2. Group 1 received laser irradiation and group 2 received photodynamic therapy as adjunctive treatment. Clinical parameters including plaque index (PI), bleeding on probing (BOP), probing depth (PD) and clinical attachment level (CAL) were measured at baseline, 3 months and 6 months. Sub gingival plaque samples were collected for microbiological analysis by real-time polymerase chain reaction (PCR) for detection of *P.gingivalis*.

Results: Treatment groups showed significant improvement in all the clinical parameters and a significant reduction in the counts of *p.gingivalis* at 6 months when compared to baseline ($P < 0.05$).when comparing group 1 and group 2, group 2 showed significant reductions in probing depth. All the other parameters exhibited no significant differences between the two groups.

Conclusion: Within the limitations of the study it can be concluded that both laser and PDT can be used for the successful management of chronic periodontitis patients. When compared to laser, PDT showed an improvement in clinical parameters specifically probing depth.

